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Dr. Fletcher's Remarks to ITT Executive Association, New York
November 6, 1974

To start with, I would like to give you a brief progress report on the NASA Space Program of the Seventies.

Some people still wonder what has happened to the space program after completion of the Apollo Program, which kept us so busy in the Sixties.

In answer to that question, I can say we are making significant progress in every major area of space exploration and space use, and we have every reason to expect this steady progress to continue through the 1980s as well.

We are moving ahead in four main areas of space activity.

One. We have designed the Space Shuttle. You might say we have "invented" it. Now we are building it. We will begin flying it in 1977.

The Space Shuttle is a reusable spaceship that will give us a much better way, and cheaper way, to get payloads of all kinds into Earth orbit. It will take off like a rocket, cruise in Earth orbit like a space station, and return to Earth for a runway landing just like an airliner.

The Space Shuttle is our main effort to develop new technology for space use in this decade. Work on the Shuttle is proceeding according to plan, and we have had strong backing for it in the White House and in Congress year after year since 1970.

Two. The second main area in which we are making progress is the development of more productive payloads to be deployed in Earth orbit by the Space Shuttle.

Some of these payloads will be in the applications field -- what I call the "working satellites".

These include the familiar communications and weather satellites, and other satellites to observe the Earth for many useful purposes.

We are also demonstrating how laboratories in Earth orbit, taking advantage of the vacuum and zero gravity of space, can be used to produce new or better products which cannot be produced on Earth.

We are also investigating the feasibility of putting power plants into orbit which would convert solar energy to electricity and beam it to Earth stations in the form of microwaves.

Three. Some of the new payloads we are developing to use with the Space Shuttle will be used for scientific purposes, to extend our knowledge of the universe. Such satellites are of great value because telescopes and other instruments aboard spacecraft can see the stars and other objects in the Universe much more clearly than they can be seen from the ground.

Four. We are also making steady progress in our planetary programs, in which we send automated spacecraft out to explore the other planets of the Solar System. Within the past year, our automated spacecraft have carried out very successful missions to three different planets, Venus, Mercury, and Jupiter. The unmanned exploration of Jupiter is most exciting, and I will come back to that, with pictures, in a moment.

In this progress report, I would also like to mention the success we are having in promoting international cooperation in space. I will cite two examples.

Our most important project, to date, for cooperation with the Soviet Union calls for our Apollo spacecraft to link up with their Soyuz spacecraft in Earth orbit in July of next year. Preparations for this joint flight are proceeding smoothly. Our astronauts are learning Russian, the cosmonauts are learning English. The working relationships between the technical people on both sides have been very good.

Another important step forward in space cooperation is the recent decision of nine European countries to undertake the design and development of the Spacelab.

The Spacelab will be a prefabricated unit, something like a small house trailer, with standard laboratory equipment built in. But there will also be room, of course, for scientists to place their experiments aboard and accompany them into space.

Thus we will be able to use the Space Shuttle in two different ways, with the Spacelab or without it.

When the Shuttle operates without the Spacelab it will serve as an efficient, reusable space truck to haul automated spacecraft to Earth orbit, to service them there, and, on occasion, to bring them back to Earth for repairs or refurbishment.

But when the Spacelab is put aboard, the Space Shuttle becomes much more than a truck. It becomes a small but very versatile manned space station for missions of from seven to 30 days.

The regular three-man crew of the Space Shuttle will be highly trained astronauts. But the Shuttle will also have accommodations for an additional four persons who will not have to be trained astronauts. This means that the men and women who work as technicians and scientists in the Spacelab will need only general good health and a brief training period to qualify for space flight. Of course, they will also have to have a special desire to work in space, and worthwhile experiments to perform.

I should also remind you that the first A in NASA stands for Aeronautics, and that we are making a major effort in this field, too. We are learning how to make airliners more efficient in their use of fuel, and how to reduce congestion, noise, and pollution around our airports, and how to build more efficient passenger and freight aircraft for the short flights of one, two, and three hundred miles within large metropolitan areas. We are also looking into the possibilities of using large dirigibles as heavy freight movers, and of using liquid hydrogen as an aviation fuel. But I will limit my talk today to space.

To conclude this brief progress report, let me say that we have space programs planned for this decade and the next that are challenging and that promise rich returns. We have space programs planned for this decade and the next that we Americans can be proud of, and that should help us to maintain our scientific and technological leadership in the world. And we have a space program that we can easily afford. We believe we can operate effectively in the decade ahead for annual budgets of around $3 billion -- or about one half of what we were spending during the peak years of the Apollo program in the Sixties.

With stabilized annual budgets at about the $3 billion level, plus necessary adjustments for inflation, we believe we can continue to make steady progress in developing the practical and scientific uses of spacecraft in Earth orbit, in exploring with automated spacecraft throughout the Solar System, and in building and operating an efficient space transportation system based on the Space Shuttle.

Now I would like to describe some recent achievements in the space program, and some future plans.

Introduction to Slides for ITT Executive Association Remarks

I cannot begin to tell you in detail about all the things we are doing in the Space Program for the Seventies, and hope to do in decades beyond.

But I would like, at this point, to show some slides that illustrate some recent achievements and some future plans. I have chosen subjects which I think lend themselves to graphic presentation.

I will start with the Skylab flights we carried out in Earth orbit in 1973 and early 1974.

CONCLUSION - 1

In conclusion, I want to talk a bit about our space program budget over the next two decades, and what we expect to get from our investment in space exploration.

We hope we can maintain the present level of space effort into the next decade, and our long-range planning is based on that expectation.

We realize, of course, that in this period of emphasis on reducing the federal budget, some people are going to look at the space program as a likely place to cut.

We are prepared to make a convincing case that this should not be done, and I want to enlist your help.

How vulnerable are we?

Well, part of our program is relatively immune to budget cutting:

-- We have to continue a strong effort in aeronautical research and development, or lose important foreign markets for American aircraft. I believe that is generally accepted and understood. There is also strong support in Congress for our efforts to reduce aircraft noise and pollution, and congestion around airports. And our efforts to make aircraft more efficient in terms of fuel consumption certainly make sense for the years ahead.

So our aeronautics budget should not be in danger.

-- We also expect the necessary funding to complete the Space Shuttle on schedule and bring it into operation in 1980. We have reached a point in the Shuttle program where it would be wasteful to try to stretch it out or delay it. The Shuttle is the key to continued American progress in using Earth orbit for practical benefits, and I don't think Congress is about to throw that key away.

-- Delaying the Shuttle now would also upset the European schedule for developing the Spacelab. Having convinced the Europeans of the wisdom of investing more than $400 million of their own money in Spacelab, we certainly would not want to discourage them in any way. Spacelab is our most important international effort to date, and should lead to greatly increased cooperation and cost sharing.

-- We expect continued strong support for our applications programs -- that is, for our programs to win practical benefits from spacecraft in Earth orbit. Congress has been very interested in the potential for Earth observation satellites and improved weather satellites. The communications industry wants us to spend more, not less, on developing new technology. And so on.

It is easy to show that applications satellites are a good investment.

So, if we become vulnerable to budget cutting in any major area of NASA activities in the years ahead, it may be in our space science programs to study the Universe from Earth orbit and in our planetary programs to send automated spacecraft to explore throughout the Solar System.

We do have strong support from the scientific community and many members of Congress for these scientific programs. But it is easy for the budget cutters to say, "Well, these scientific programs are something you don't have to do now. They can wait." We have already run into this kind of opposition to our plans to put the Large Space Telescope in orbit in the early 1980s.

In support of our scientific programs, I would like to make five main points:

One. It is incorrect to say that space science programs can be put off indefinitely. We now have the teams in being to do this kind of work; they are an important national resource, an important resource of mankind; they must be given challenging work to do, or their unique skills and experience will be lost. Space exploration, to be productive, cannot be a now-and-then activity.

Two. Space science does produce practical benefits. We cannot always predict what they will be, but they are inevitable. The more we learn about the atmospheres of other planets, the better we will be able to understand the weather and climate of Earth, and the better we will be able to protect our atmosphere from the kinds of pollution that may destroy life on this planet if we are not careful.

In the early decades of this century, astronomers who studied the Sun paved the way for the Atomic Age. Our space science programs today will help us harness the power of nuclear fission for peaceful purposes; and our study of Quasars, Pulsars, and Black Holes far out in the Universe may lead us to new sources of energy more powerful than any we comprehend today.

Three. Our science programs force the development of valuable new technology. Our development of atomic power sources for the tiny Pioneer spacecraft that are exploring Jupiter and Saturn is one example out of many. The automated laboratories we will land on Mars in 1976 will advance the art and science of cybernetics and benefit us in many ways.

As a nation, we make an important part of our living from the sale of high technology products and processes abroad.

I don't know a better way for the Federal Government to help American industry keep ahead of the competition in high technology than by steadily increasing our capabilities to explore throughout the Solar System and to seek basic understanding of how the Universe works.

Four. I consider the exploration of space, and study of the Universe from Earth orbit, the kind of national undertaking that inspires us and encourages us as a people, that makes us proud to be Americans, that makes us want to excel at whatever we are doing, whether it is farming, or manufacturing, or teaching, or managing ITT.

Success in such programs as Pioneer 10 and Mariner 9 and 10 is one of the good things happening in our country today. We should keep them happening. We need the intellectual exercise. We need the warm glow of success.

Five. Finally, I want to talk about our space science programs and our voyages to the planets as a special kind of investment. They are more than an investment in high technology, or in potential practical benefits. They are more than an investment in a better America. I speak now of a long-term invertment in the future of the human race. We have the capability to begin acquiring the technology and the experience we need to move some of our people beyond planet Earth and establish the first colonies in Earth orbit, or Solar orbit, or on the planets. No other human beings in the history of the world have had such capabilities. Our forefathers down through the ages could only dream of such ventures. We have the capabilities and the clear challenge to start making these dreams come true. The present state of the world, with threatened overcrowding and diminishing natural resources, is giving us a push, too. Pioneer, and Mariner, and Viking are blazing the trail for us. Let's keep them on the job. Let's prepare, in due time, to follow them. In your lifetime, and mine.

I thank you.